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GKN Driveline International GmbH

Hauptstrasse 130

53797 Lohmar

Oy/bec(2005008135)

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Longitudinal plunging unit with cage securing means

Claims

1. A longitudinal plunging unit (24) for transmitting torque in a shaft assembly, comprising
 - a profiled sleeve (25) with circumferentially distributed, longitudinally extending first ball grooves (26);
 - a profiled journal (1) which comprises a first portion (5) with circumferentially distributed, longitudinally extending second ball grooves (6) with ball groove run-outs (7) as well as an axially adjoining second portion (8);
 - balls (11) which are arranged in groups in pairs of first ball grooves and second ball grooves (26, 6), and
 - a ball cage (10) which is arranged radially between the profiled sleeve (25) and the profiled journal (1) and fixes the balls (11) in their axial position relative to one another, wherein the ball cage (10) is displaceable, relative to the profiled journal (1), between axial stops arranged at a distance from one another,

characterised in

that there is arranged an abutment sleeve (13a, 13b, 13c, 13d) on the profiled journal (1), which abutment sleeve is able to abut the profiled journal (1) or a component connected thereto and delimits the

displacement path of the ball cage (10) towards the second portion (8).

2. A longitudinal plunging unit according to claim 1,

characterised in

that the abutment sleeve (13a, 13b, 13c, 13d) comprises an inner diameter (16) which is greater than a greatest outer diameter of the first portion (5) of the profiled journal.

3. A longitudinal plunging unit according to claim 1 or 2,

characterised in

that the abutment sleeve (13a, 13b, 14c, 13d) comprises an outer diameter (19) which is smaller than a smallest inner diameter of the profiled sleeve (25) in the region of the ball grooves (26).

4. A longitudinal plunging unit according to any one of claims 1 to 3,

characterised in

that the component connected to the profiled journal (1) is a ball hub (4) of a constant velocity universal joint which ball hub (4) is secured to the end (3) of the profiled journal (1), which end (3) faces away from the profiled sleeve (25).

5. A longitudinal plunging unit according to any one of claims 1 to 4,

characterised in

that the length of the abutment sleeve (13a, 13b, 13c, 13d) is designed such that the balls (11) facing the abutment sleeve (13a, 13b, 13c, 13d), in the end position of the ball cage (10), are each arranged with an axial distance from the ball groove run-out (7).

6. A longitudinal plunging unit according to any one of claims 1 to 5,

characterised in

that the abutment sleeve (13a, 13b, 13c, 13d) is able to abut a securing ring (21) which is positioned in an annular groove (22) of the profiled journal (1), wherein the annular groove is arranged so as to axially adjoin the ball groove run-out (7) of the profiled journal (1).

7. A longitudinal plunging unit according to any one of claims 1 to 5,

characterised in

that the abutment sleeve (13a, 13b, 13c, 13d) is able to abut an annular collar (9) of the profiled journal (1), which annular collar (9) is arranged so as to axially adjoin the ball groove run-out (7) of the profiled journal (1).

8. A longitudinal plunging unit according to any one of claims 1 to 7,

characterised in

that the abutment sleeve (13a) is produced as a separate component.

9. A longitudinal plunging unit according to any one of claims 1 to 7,

characterised in

that the abutment sleeve (13b, 13c, 13d) is produced so as to be integral with the ball cage (10).

10. A longitudinal plunging unit according to any one of claims 1 to 9,

characterised in

that the abutment sleeve (13a, 13b, 13c, 13d) consists of plastics or metal.